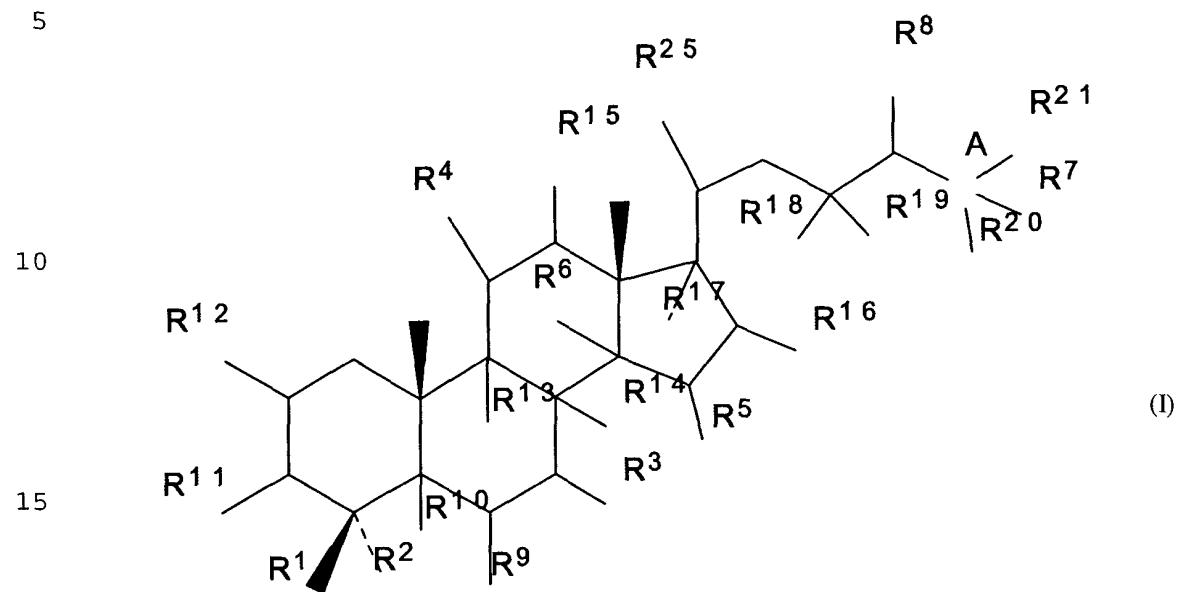


What is claimed is:

1. A method of regulating meiosis in a mammalian germ cell comprising administering to a germ cell in need of such regulation, an effective amount of a compound of formula (I)



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wherein R<sup>1</sup> and R<sup>2</sup>, independently, are selected from the group consisting of hydrogen and branched or unbranched C<sub>1</sub>-C<sub>6</sub> alkyl which may be substituted by halogen, hydroxy or cyano, or wherein R<sup>1</sup> and R<sup>2</sup> together designate methylene or, together with the carbon atom to which they are bound, form a cyclopropane ring, a cyclopentane ring, or a cyclohexane ring; R<sup>3</sup> is selected from the group consisting of hydrogen, methylene, hydroxy, methoxy, acetoxy, oxo, =NOR<sup>26</sup> wherein R<sup>26</sup> is hydrogen or C<sub>1</sub>-C<sub>3</sub> alkyl, halogen, and hydroxy and C<sub>1</sub>-C<sub>4</sub> alkyl bound to the same carbon atom of the sterol skeleton, or R<sup>3</sup> designates, together with R<sup>9</sup> or R<sup>14</sup>, an additional bond between the carbon atoms to which R<sup>3</sup> and R<sup>9</sup> or R<sup>14</sup> are bound; R<sup>4</sup> is selected from the group consisting of hydrogen, methylene, hydroxy, methoxy, acetoxy, oxo, =NOR<sup>27</sup> wherein R<sup>27</sup> is hydrogen or C<sub>1</sub>-C<sub>3</sub> alkyl, halogen, and hydroxy and C<sub>1</sub>-C<sub>4</sub> alkyl bound to the same carbon atom of the sterol skeleton, or R<sup>4</sup> designates, together with R<sup>13</sup> or R<sup>15</sup>, an

additional bond between the carbon atoms to which R<sup>4</sup> and R<sup>13</sup> or R<sup>15</sup> are bound; R<sup>5</sup> is selected from the group consisting of hydrogen, C<sub>1</sub>-C<sub>4</sub> alkyl, methylene, hydroxy, methoxy, oxo, and =NOR<sup>22</sup> wherein R<sup>22</sup> is hydrogen or C<sub>1</sub>-C<sub>3</sub> alkyl, or R<sup>5</sup> designates, together with R<sup>6</sup>, an additional bond between the carbon atoms to which R<sup>5</sup> and R<sup>6</sup> are bound; R<sup>6</sup> is hydrogen or R<sup>6</sup> designates, together with R<sup>5</sup>, an additional bond between the carbon atoms to which R<sup>5</sup> and R<sup>6</sup> are bound; R<sup>9</sup> is hydrogen or R<sup>9</sup> designates, together with R<sup>3</sup> or R<sup>10</sup>, an additional bond between the carbon atoms to which R<sup>9</sup> and R<sup>3</sup> or R<sup>10</sup> are bound; R<sup>10</sup> is hydrogen or R<sup>10</sup> designates, together with R<sup>9</sup>, an additional bond between the carbon atoms to which R<sup>10</sup> and R<sup>9</sup> are bound; R<sup>11</sup> is selected from the group consisting of hydroxy, alkoxy, substituted alkoxy, acyloxy, sulphonyloxy, phosphoryloxy, oxo, =NOR<sup>28</sup> wherein R<sup>28</sup> is hydrogen or C<sub>1</sub>-C<sub>3</sub> alkyl, halogen and hydroxy and C<sub>1</sub>-C<sub>4</sub> alkyl bound to the same carbon atom of the sterol skeleton, or R<sup>11</sup> designates, together with R<sup>12</sup>, an additional bond between the carbon atoms to which R<sup>11</sup> and R<sup>12</sup> are bound; R<sup>12</sup> is selected from the group consisting of hydrogen, C<sub>1</sub>-C<sub>3</sub> alkyl, vinyl, C<sub>1</sub>-C<sub>3</sub> alkoxy and halogen, or R<sup>12</sup> designates, together with R<sup>11</sup>, an additional bond between the carbon atoms to which R<sup>12</sup> and R<sup>11</sup> are bound; R<sup>13</sup> is hydrogen or R<sup>13</sup> designates, together with R<sup>4</sup> or R<sup>14</sup>, an additional bond between the carbon atoms to which R<sup>13</sup> and R<sup>4</sup> or R<sup>14</sup> are bound; R<sup>14</sup> is hydrogen or R<sup>14</sup> designates, together with R<sup>3</sup>, R<sup>6</sup> or R<sup>13</sup>, an additional bond between the carbon atoms to which R<sup>14</sup> and R<sup>3</sup> or R<sup>6</sup> or R<sup>13</sup> are bound; R<sup>15</sup> is selected from the group consisting of hydrogen, C<sub>1</sub>-C<sub>4</sub> alkyl, methylene, hydroxy, methoxy, acetoxy, oxo, and =NOR<sup>23</sup> wherein R<sup>23</sup> is hydrogen or C<sub>1</sub>-C<sub>3</sub> alkyl, or R<sup>15</sup> designates, together with R<sup>4</sup>, an additional bond between the carbon atoms to which R<sup>15</sup> and R<sup>4</sup> are bound; R<sup>16</sup> is selected from the group consisting of hydrogen, C<sub>1</sub>-C<sub>3</sub> alkyl, methylene, hydroxy, methoxy, oxo and =NOR<sup>24</sup> wherein R<sup>24</sup> is hydrogen or C<sub>1</sub>-C<sub>3</sub> alkyl, or R<sup>16</sup> designates, together with R<sup>17</sup>, an additional bond between the carbon atoms to which R<sup>16</sup> and R<sup>17</sup> are bound; R<sup>17</sup> is hydrogen or hydroxy or R<sup>17</sup> designates, together with R<sup>16</sup>, an additional bond between the carbon atoms to which R<sup>17</sup> and R<sup>16</sup> are bound; R<sup>18</sup> and R<sup>19</sup> are, independently, hydrogen or fluoro; R<sup>25</sup> is selected from the group consisting of hydrogen, C<sub>1</sub>-C<sub>4</sub> alkyl, methylene, hydroxy and oxo; A is a carbon atom or a nitrogen atom; when A is a carbon atom, R<sup>7</sup> is selected from the group consisting of hydrogen, hydroxy and fluoro, and R<sup>8</sup> is selected from the group

consisting of hydrogen, C<sub>1</sub>-C<sub>4</sub> alkyl, methylene and halogen, or R<sup>7</sup> designates, together with R<sup>8</sup>, an additional bond between the carbon atoms to which R<sup>7</sup> and R<sup>8</sup> are bound; R<sup>20</sup> is selected from the group consisting of C<sub>1</sub>-C<sub>4</sub> alkyl, trifluoromethyl and C<sub>3</sub>-C<sub>6</sub> cycloalkyl and R<sup>21</sup> is selected from the group consisting of C<sub>1</sub>-C<sub>4</sub> alkyl, C<sub>1</sub>-C<sub>4</sub> hydroxyalkyl, C<sub>1</sub>-C<sub>4</sub> haloalkyl containing up to three halogen atoms,  
5 methoxymethyl, acetoxymethyl, and C<sub>3</sub>-C<sub>6</sub> cycloalkyl, or R<sup>20</sup> and R<sup>21</sup>, together with the carbon atom to which they are bound, form a C<sub>3</sub>-C<sub>6</sub> cycloalkyl ring; and when A is a nitrogen atom, R<sup>7</sup> designates a lone pair of electrons and R<sup>8</sup> is selected from the group consisting of hydrogen, C<sub>1</sub>-C<sub>4</sub> alkyl and oxo; R<sup>20</sup> and R<sup>21</sup> are, independently, C<sub>1</sub>-C<sub>4</sub> alkyl or C<sub>3</sub>-C<sub>6</sub> cycloalkyl; provided that the compound of formula (I) does not have any cumulated double bonds and further provided that the compound is not one of the following  
10 compounds:  
Cholest-7-ene-3β-ol;  
4-Methylcholest-7-ene-3β-ol;  
4-Ethylcholest-7-ene-3β-ol;  
4,4-Dimethylcholest-7-ene-3β-ol;  
15 4α-Methyl-4β-ethylcholest-7-ene-3β-ol;  
4α-Ethyl-4β-methylcholest-7-ene-3β-ol;  
4,4-Diethylcholest-7-ene-3β-ol;  
4-Propylcholest-7-ene-3β-ol;  
4-Butylcholest-7-ene-3β-ol;  
20 4-Isobutylcholest-7-ene-3β-ol;  
4,4-Tetramethylenecholest-7-ene-3β-ol;  
4,4-Pentamethylenecholest-7-ene-3β-ol;  
Cholest-8-ene-3β-ol;  
4-Methylcholest-8-ene-3β-ol;  
25 4-Ethylcholest-8-ene-3β-ol;  
4,4-Dimethylcholest-8-ene-3β-ol;  
4α-Methyl-4β-ethylcholest-8-ene-3β-ol;  
4α-Ethyl-4β-methylcholest-8-ene-3β-ol;  
4,4-Diethylcholest-8-ene-3β-ol;  
30 4-Propylcholest-8-ene-3β-ol;

4-Butylcholest-8-ene-3 $\beta$ -ol;  
4-Isobutylcholest-8-ene-3 $\beta$ -ol;  
4,4-Tetramethylenecholest-8-ene-3 $\beta$ -ol;  
4,4-Pentamethylenecholest-8-ene-3 $\beta$ -ol;  
5 Cholest-8(14)-ene-3 $\beta$ -ol;  
4-Methylcholest-8(14)-ene-3 $\beta$ -ol;  
4-Ethylcholest-8(14)-ene-3 $\beta$ -ol;  
4,4-Dimethylcholest-8(14)-ene-3 $\beta$ -ol;  
4 $\alpha$ -Methyl-4 $\beta$ -ethylcholest-8(14)-ene-3 $\beta$ -ol;  
10 4 $\alpha$ -Ethyl-4 $\beta$ -methylcholest-8(14)-ene-3 $\beta$ -ol;  
4,4-Diethylcholest-8(14)-ene-3 $\beta$ -ol;  
4-Propylcholest-8(14)-ene-3 $\beta$ -ol;  
4-Butylcholest-8(14)-ene-3 $\beta$ -ol;  
4-Isobutylcholest-8(14)-ene-3 $\beta$ -ol;  
15 4,4-Tetramethylenecholest-8(14)-ene-3 $\beta$ -ol;  
4,4-Pentamethylenecholest-8(14)-ene-3 $\beta$ -ol;  
Cholesta-8,14-diene-3 $\beta$ -ol;  
4-Methylcholesta-8,14-diene-3 $\beta$ -ol;  
4-Ethylcholesta-8,14-diene-3 $\beta$ -ol;  
20 4,4-Dimethylcholesta-8,14-diene-3 $\beta$ -ol;  
4 $\alpha$ -Methyl-4 $\beta$ -ethylcholesta-8,14-diene-3 $\beta$ -ol;  
4 $\alpha$ -Ethyl-4 $\beta$ -methylcholesta-8,14-diene-3 $\beta$ -ol;  
4,4-Diethylcholesta-8,14-diene-3 $\beta$ -ol;  
4-Propylcholesta-8,14-diene-3 $\beta$ -ol;  
25 4-Butylcholesta-8,14-diene-3 $\beta$ -ol;  
4-Isobutylcholesta-8,14-diene-3 $\beta$ -ol;  
4,4-Tetramethylenecholesta-8,14-diene-3 $\beta$ -ol;  
4,4-Pentamethylenecholesta-8,14-diene-3 $\beta$ -ol;  
Cholesta-8,24-diene-3 $\beta$ -ol;  
30 4-Methylcholesta-8,24-diene-3 $\beta$ -ol;  
4-Ethylcholesta-8,24-diene-3 $\beta$ -ol;  
4,4-Dimethylcholesta-8,24-diene-3 $\beta$ -ol;

4 $\alpha$ -Methyl-4 $\beta$ -ethylcholesta-8,24-diene-3 $\beta$ -ol;

4 $\alpha$ -Ethyl-4 $\beta$ -methylcholesta-8,24-diene-3 $\beta$ -ol;

4,4-Diethylcholesta-8,24-diene-3 $\beta$ -ol;

4-Propylcholesta-8,24-diene-3 $\beta$ -ol;

5 4-Butylcholesta-8,24-diene-3 $\beta$ -ol;

4-Isobutylcholesta-8,24-diene-3 $\beta$ -ol;

4,4-Tetramethylenecholesta-8,24-diene-3 $\beta$ -ol;

4,4-Pentamethylenecholesta-8,24-diene-3 $\beta$ -ol;

Cholesta-8,14,24-triene-3 $\beta$ -ol;

10 4-Methylcholesta-8,14,24-triene-3 $\beta$ -ol;

4-Ethylcholesta-8,14,24-triene-3 $\beta$ -ol;

4,4-Dimethylcholesta-8,14,24-triene-3 $\beta$ -ol;

4 $\alpha$ -Methyl-4 $\beta$ -ethylcholesta-8,14,24-triene-3 $\beta$ -ol;

4 $\alpha$ -Ethyl-4 $\beta$ -methylcholesta-8,14,24-triene-3 $\beta$ -ol;

15 4,4-Diethylcholesta-8,14,24-triene-3 $\beta$ -ol;

4-Propylcholesta-8,14,24-triene-3 $\beta$ -ol;

4-Butylcholesta-8,14,24-triene-3 $\beta$ -ol;

4-Isobutylcholesta-8,14,24-triene-3 $\beta$ -ol;

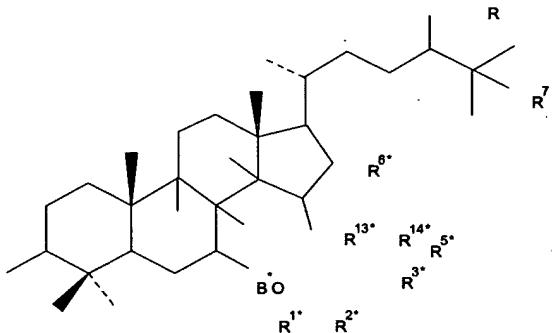
4,4-Tetramethylenecholesta-8,14,24-triene-3 $\beta$ -ol; and

20 4,4-Pentamethylenecholesta-8,14,24-triene-3 $\beta$ -ol;

and esters and ethers thereof.

2. The method of claim 1, provided that it is not a compound of formula (II)

25



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(II)

wherein R<sup>1\*</sup> and R<sup>2\*</sup>, independently, are selected from the group consisting of hydrogen, branched or unbranched C<sub>1</sub>-C<sub>6</sub> alkyl which may be substituted by halogen or hydroxy or wherein R<sup>1\*</sup> and R<sup>2\*</sup>,

5 together with the carbon atom to which they are bound, form a cyclopentane ring or a cyclohexane ring; R<sup>13\*</sup> and R<sup>14\*</sup> together designate an additional bond between the carbon atoms to which they are bound in which case R<sup>3\*</sup> is hydrogen and R<sup>6\*</sup> and R<sup>5\*</sup> are either hydrogen or together they designate an additional bond between the carbon atoms to which they are bound; or R<sup>3\*</sup> and R<sup>14\*</sup> together designate an additional bond between the carbon atoms to which they are bound in which case R<sup>13\*</sup> is hydrogen and R<sup>6\*</sup> and R<sup>5\*</sup> are either hydrogen or together they designate an additional bond between the carbon atoms to which they are bound; or R<sup>6\*</sup> and R<sup>14\*</sup> together designate an additional bond between the carbon atoms to which they are bound in which case R<sup>13\*</sup>, R<sup>3\*</sup> and R<sup>5\*</sup> are all hydrogen; R<sup>8\*</sup> and R<sup>7\*</sup> are hydrogen or together they designate an additional bond between the carbon atoms to which they are bound; and B\* is either hydrogen or an acyl group, or a group which together with the remaining part of the molecule forms an ether.

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3. The method of claim 1, wherein R<sup>1</sup> and R<sup>2</sup> are both hydrogen; both methyl; one is hydrogen and the other is methyl; or together designate methylene, or wherein R<sup>1</sup> and R<sup>2</sup>, together with the carbon atom to which they are bound, form a cyclopropane ring, a cyclopentane ring, or a cyclohexane ring.

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4. The method of claim 1, wherein R<sup>1</sup> is branched or unbranched C<sub>1</sub>-C<sub>6</sub> alkyl, optionally substituted by halogen, hydroxy or cyano, and wherein R<sup>2</sup> is branched or unbranched C<sub>1</sub>-C<sub>6</sub> alkyl, optionally substituted by halogen, hydroxy or cyano.

25

5. The method of claim 1, wherein R<sup>3</sup> is hydrogen, methylene, hydroxy, methoxy, acetoxy, halogen, oxo, =NOH, or wherein R<sup>3</sup> is =NOR<sup>26</sup> and R<sup>26</sup> is C<sub>1</sub>-C<sub>3</sub> alkyl, or wherein R<sup>3</sup> is hydroxy and C<sub>1</sub>-C<sub>4</sub> alkyl bound to the same carbon atom of the sterol skeleton.

6. The method of claim 1, wherein R<sup>3</sup>, together with R<sup>9</sup>, designates an additional bond between the

carbon atoms to which R<sup>3</sup> and R<sup>9</sup> are bound, or wherein R<sup>3</sup>, together with R<sup>14</sup>, designates an additional bond between the carbon atoms to which R<sup>3</sup> and R<sup>14</sup> are bound.

7. The method of claim 1, wherein R<sup>4</sup> is hydrogen, methylene, hydroxy, methoxy, acetoxy, oxo, =NOH,

5       =NOR<sup>27</sup>, wherein R<sup>27</sup> is C<sub>1</sub>-C<sub>3</sub> alkyl, or wherein R<sup>4</sup> is hydroxy and C<sub>1</sub>-C<sub>4</sub> alkyl bound to the same carbon atom of the sterol skeleton, or wherein R<sup>4</sup>, together with R<sup>13</sup>, designates an additional bond between the carbon atoms to which R<sup>4</sup> and R<sup>13</sup> are bound, or wherein R<sup>4</sup>, together with R<sup>15</sup>, designates an additional bond between the carbon atoms to which R<sup>4</sup> and R<sup>15</sup> are bound.

10      8. The method of claim 1, wherein R<sup>5</sup> is hydrogen, C<sub>1</sub>-C<sub>4</sub> alkyl, methylene, hydroxy, methoxy, oxo,

=NOH, =NOR<sup>22</sup>, wherein R<sup>22</sup> is C<sub>1</sub>-C<sub>3</sub> alkyl, wherein R<sup>5</sup>, together with R<sup>6</sup>, designates an additional bond between the carbon atoms to which R<sup>5</sup> and R<sup>6</sup> are bound.

9. The method of claim 1, wherein R<sup>6</sup> is hydrogen, or wherein R<sup>6</sup>, together with R<sup>14</sup>, designates an

15      additional bond between the carbon atoms to which R<sup>6</sup> and R<sup>14</sup> are bound.

10. The method of claim 1, wherein R<sup>9</sup> is hydrogen, or wherein R<sup>9</sup>, together with R<sup>10</sup>, designates an

additional bond between the carbon atoms to which R<sup>9</sup> and R<sup>10</sup> are bound.

20      11. The method of claim 1, wherein R<sup>10</sup> is hydrogen.

12. The method of claim 1, wherein R<sup>11</sup> is hydroxy, alkoxy, aralkyloxy, alkoxyalkoxy or

alkanoyloxyalkyl, each group comprising a total of up to 10 carbon atoms, C<sub>1</sub>-C<sub>4</sub> alkoxy, methoxy, ethoxy,

CH<sub>3</sub>OCH<sub>2</sub>O-, pivaloyloxymethoxy; an acyloxy group derived from an acid having from 1 to 20 carbon

25      atoms, an acyloxy group selected from the group consisting of acetoxy, benzoyloxy, pivaloyloxy,

butyryloxy, nicotinoyloxy, isonicotinoyloxy, hemi succinoyloxy, hemi glutaroyloxy, butylcarbamoyloxy,

phenylcarbamoyloxy, butoxycarbonyloxy, *tert*-butoxycarbonyloxy and ethoxycarbonyloxy,

13. The method of claim 1, wherein R<sup>11</sup> is sulphonyloxy, phosphonyloxy, oxo, =NOH, =NOR<sup>28</sup>, wherein R<sup>28</sup> is C<sub>1</sub>-C<sub>3</sub> alkyl, or wherein R<sup>11</sup> is halogen, hydroxy and C<sub>1</sub>-C<sub>4</sub> alkyl bound to the same carbon atom of the sterol skeleton, or wherein R<sup>11</sup>, together with R<sup>12</sup>, designates an additional bond between the carbon atoms to which R<sup>11</sup> and R<sup>12</sup> are bound.

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14. The method of claim 1, wherein R<sup>12</sup> is hydrogen, C<sub>1</sub>-C<sub>3</sub> alkyl, C<sub>1</sub>-C<sub>3</sub> alkoxy, or halogen.

15. The method of claim 1, wherein R<sup>13</sup> is hydrogen, or R<sup>13</sup>, together with R<sup>14</sup>, designates an additional bond between the carbon atoms to which R<sup>13</sup> and R<sup>14</sup> are bound.

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16. The method of claim 1, wherein R<sup>14</sup> is hydrogen.

17. The method of claim 1, wherein R<sup>15</sup> is hydrogen, C<sub>1</sub>-C<sub>4</sub> alkyl, methylene, hydroxy, methoxy, acetoxy, oxo, =NOH, or wherein R<sup>15</sup> is =NOR<sup>23</sup>, and R<sup>23</sup> is C<sub>1</sub>-C<sub>3</sub> alkyl.

15

18. The method of claim 1, wherein R<sup>16</sup> is hydrogen, C<sub>1</sub>-C<sub>3</sub> alkyl, methylene, hydroxy, methoxy, oxo, =NOH, or R<sup>16</sup> is =NOR<sup>24</sup>, wherein R<sup>24</sup> is C<sub>1</sub>-C<sub>3</sub> alkyl, or R<sup>16</sup>, together with R<sup>17</sup>, designates an additional bond between the carbon atoms to which R<sup>16</sup> and R<sup>17</sup> are bound.

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19. The method of claim 1, wherein R<sup>17</sup> is hydrogen or hydroxy.

20. The method of claim 1, wherein R<sup>18</sup> and R<sup>19</sup> are both hydrogen, both fluoro, or one is fluoro and the other is hydrogen.

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21. The method of claim 1, wherein R<sup>25</sup> is hydrogen, C<sub>1</sub>-C<sub>4</sub> alkyl, methylene, hydroxy, or oxo.

22. The method of claim 1, wherein A is a carbon atom.

23. The method of claim 1, wherein R<sup>7</sup> is hydrogen, hydroxy, fluoro, or R<sup>7</sup>, together with R<sup>8</sup>, designates an additional bond between the carbon atoms to which R<sup>7</sup> and R<sup>8</sup> are bound.

24. The method of claim 1, wherein R<sup>8</sup> is hydrogen, C<sub>1</sub>-C<sub>4</sub> alkyl, methylene, or halogen

5

25. The method of claim 1, wherein R<sup>20</sup> is C<sub>1</sub>-C<sub>4</sub> alkyl, trifluoromethyl, or C<sub>3</sub>-C<sub>6</sub> cycloalkyl.

26. The method of claim 1, wherein R<sup>21</sup> is C<sub>1</sub>-C<sub>4</sub> alkyl, C<sub>1</sub>-C<sub>4</sub> hydroxyalkyl, C<sub>1</sub>-C<sub>4</sub> haloalkyl containing up to three halogen atoms, methoxymethyl, acetoxyethyl, or C<sub>3</sub>-C<sub>6</sub> cycloalkyl.

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27. The method of claim 1, wherein R<sup>20</sup> and R<sup>21</sup>, together with the carbon atom to which they are bound, form a C<sub>3</sub>-C<sub>6</sub> cycloalkyl ring.

28. The method of claim 1, wherein A is a nitrogen atom.

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29. The method of claim 28, wherein R<sup>8</sup> is hydrogen, C<sub>1</sub>-C<sub>4</sub> alkyl, or oxo.

30. The method of claim 28, wherein R<sup>20</sup> and R<sup>21</sup>, independently, are selected from the group consisting of C<sub>1</sub>-C<sub>4</sub> alkyl, cyclopropyl, cyclopentyl and cyclohexyl.

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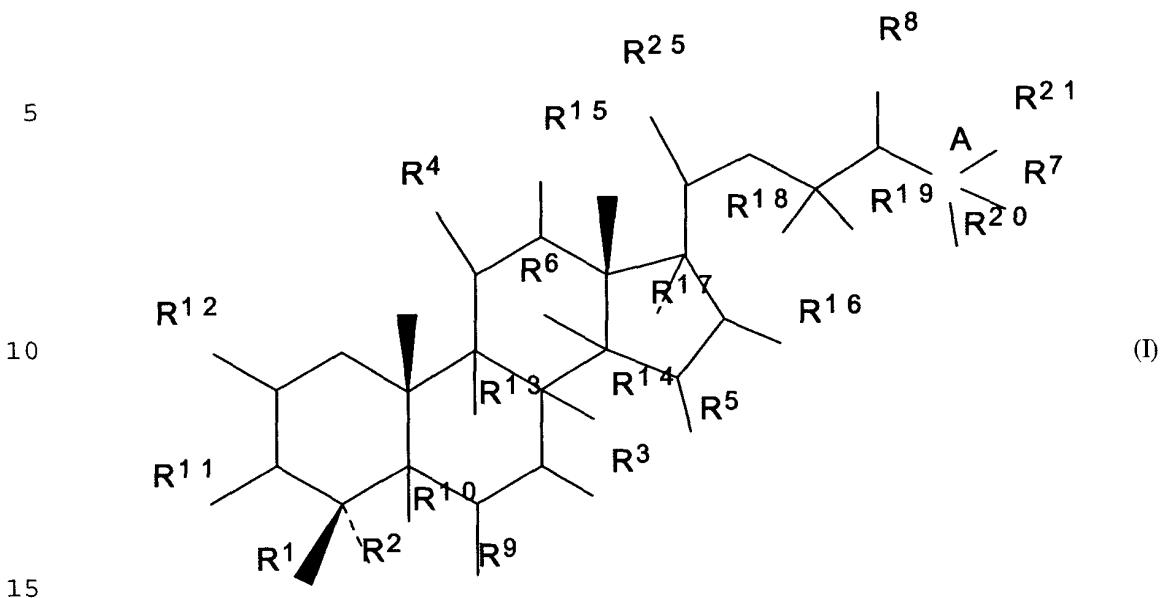
31. The method of claim 1, wherein the germ cell is an oocyte.

32. The method of claim 31, wherein the compound is administered to an oocyte *ex vivo*.

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33. The method of claim 31, wherein the germ cell is a male germ cell.

34. A method of producing mature male germ cells by administration of a compound to testicular tissue, wherein the compound is a compound of formula (I)



wherein R<sup>1</sup> and R<sup>2</sup>, independently, are selected from the group consisting of hydrogen and branched or unbranched C<sub>1</sub>-C<sub>6</sub> alkyl which may be substituted by halogen, hydroxy or cyano, or wherein R<sup>1</sup> and R<sup>2</sup> together designate methylene or, together with the carbon atom to which they are bound, form a cyclopropane ring, a cyclopentane ring, or a cyclohexane ring; R<sup>3</sup> is selected from the group consisting of hydrogen, methylene, hydroxy, methoxy, acetoxy, oxo, =NOR<sup>26</sup> wherein R<sup>26</sup> is hydrogen or C<sub>1</sub>-C<sub>3</sub> alkyl, halogen, and hydroxy and C<sub>1</sub>-C<sub>4</sub> alkyl bound to the same carbon atom of the sterol skeleton, or R<sup>3</sup> designates, together with R<sup>9</sup> or R<sup>14</sup>, an additional bond between the carbon atoms to which R<sup>3</sup> and R<sup>9</sup> or R<sup>14</sup> are bound; R<sup>4</sup> is selected from the group consisting of hydrogen, methylene, hydroxy, methoxy, acetoxy, oxo, =NOR<sup>27</sup> wherein R<sup>27</sup> is hydrogen or C<sub>1</sub>-C<sub>3</sub> alkyl, halogen, and hydroxy and C<sub>1</sub>-C<sub>4</sub> alkyl bound to the same carbon atom of the sterol skeleton, or R<sup>4</sup> designates, together with R<sup>13</sup> or R<sup>15</sup>, an additional bond between the carbon atoms to which R<sup>4</sup> and R<sup>13</sup> or R<sup>15</sup> are bound; R<sup>5</sup> is selected from the group consisting of hydrogen, C<sub>1</sub>-C<sub>4</sub> alkyl, methylene, hydroxy, methoxy, oxo, and =NOR<sup>22</sup> wherein R<sup>22</sup> is hydrogen or C<sub>1</sub>-C<sub>3</sub> alkyl, or R<sup>5</sup> designates, together with R<sup>6</sup>, an additional bond between the carbon atoms to which R<sup>5</sup> and R<sup>6</sup> are bound; R<sup>6</sup> is hydrogen or R<sup>6</sup> designates, together with R<sup>5</sup>, an additional

bond between the carbon atoms to which R<sup>5</sup> and R<sup>6</sup> are bound; R<sup>9</sup> is hydrogen or R<sup>9</sup> designates, together with R<sup>3</sup> or R<sup>10</sup>, an additional bond between the carbon atoms to which R<sup>9</sup> and R<sup>3</sup> or R<sup>10</sup> are bound; R<sup>10</sup> is hydrogen or R<sup>10</sup> designates, together with R<sup>9</sup>, an additional bond between the carbon atoms to which R<sup>10</sup> and R<sup>9</sup> are bound; R<sup>11</sup> is selected from the group consisting of hydroxy, alkoxy, substituted alkoxy, acyloxy, sulphonyloxy, phosphoryloxy, oxo, =NOR<sup>28</sup> wherein R<sup>28</sup> is hydrogen or C<sub>1</sub>-C<sub>3</sub> alkyl, halogen and hydroxy and C<sub>1</sub>-C<sub>4</sub> alkyl bound to the same carbon atom of the sterol skeleton, or R<sup>11</sup> designates, together with R<sup>12</sup>, an additional bond between the carbon atoms to which R<sup>11</sup> and R<sup>12</sup> are bound; R<sup>12</sup> is selected from the group consisting of hydrogen, C<sub>1</sub>-C<sub>3</sub> alkyl, vinyl, C<sub>1</sub>-C<sub>3</sub> alkoxy and halogen, or R<sup>12</sup> designates, together with R<sup>11</sup>, an additional bond between the carbon atoms to which R<sup>12</sup> and R<sup>11</sup> are bound; R<sup>13</sup> is hydrogen or R<sup>13</sup> designates, together with R<sup>4</sup> or R<sup>14</sup>, an additional bond between the carbon atoms to which R<sup>13</sup> and R<sup>4</sup> or R<sup>14</sup> are bound; R<sup>14</sup> is hydrogen or R<sup>14</sup> designates, together with R<sup>3</sup>, R<sup>6</sup> or R<sup>13</sup>, an additional bond between the carbon atoms to which R<sup>14</sup> and R<sup>3</sup> or R<sup>6</sup> or R<sup>13</sup> are bound; R<sup>15</sup> is selected from the group consisting of hydrogen, C<sub>1</sub>-C<sub>4</sub> alkyl, methylene, hydroxy, methoxy, acetoxy, oxo, and =NOR<sup>23</sup> wherein R<sup>23</sup> is hydrogen or C<sub>1</sub>-C<sub>3</sub> alkyl, or R<sup>15</sup> designates, together with R<sup>4</sup>, an additional bond between the carbon atoms to which R<sup>15</sup> and R<sup>4</sup> are bound; R<sup>16</sup> is selected from the group consisting of hydrogen, C<sub>1</sub>-C<sub>3</sub> alkyl, methylene, hydroxy, methoxy, oxo and =NOR<sup>24</sup> wherein R<sup>24</sup> is hydrogen or C<sub>1</sub>-C<sub>3</sub> alkyl, or R<sup>16</sup> designates, together with R<sup>17</sup>, an additional bond between the carbon atoms to which R<sup>16</sup> and R<sup>17</sup> are bound; R<sup>17</sup> is hydrogen or hydroxy or R<sup>17</sup> designates, together with R<sup>16</sup>, an additional bond between the carbon atoms to which R<sup>17</sup> and R<sup>16</sup> are bound; R<sup>18</sup> and R<sup>19</sup> are, independently, hydrogen or fluoro; R<sup>25</sup> is selected from the group consisting of hydrogen, C<sub>1</sub>-C<sub>4</sub> alkyl, methylene, hydroxy and oxo; A is a carbon atom or a nitrogen atom; when A is a carbon atom, R<sup>7</sup> is selected from the group consisting of hydrogen, hydroxy and fluoro, and R<sup>8</sup> is selected from the group consisting of hydrogen, C<sub>1</sub>-C<sub>4</sub> alkyl, methylene and halogen, or R<sup>7</sup> designates, together with R<sup>8</sup>, an additional bond between the carbon atoms to which R<sup>7</sup> and R<sup>8</sup> are bound; R<sup>20</sup> is selected from the group consisting of C<sub>1</sub>-C<sub>4</sub> alkyl, trifluoromethyl and C<sub>3</sub>-C<sub>6</sub> cycloalkyl and R<sup>21</sup> is selected from the group consisting of C<sub>1</sub>-C<sub>4</sub> alkyl, C<sub>1</sub>-C<sub>4</sub> hydroxyalkyl, C<sub>1</sub>-C<sub>4</sub> haloalkyl containing up to three halogen atoms,

methoxymethyl, acetoxyethyl, and C<sub>3</sub>-C<sub>6</sub> cycloalkyl, or R<sup>20</sup> and R<sup>21</sup>, together with the carbon atom to which they are bound, form a C<sub>3</sub>-C<sub>6</sub> cycloalkyl ring; and when A is a nitrogen atom, R<sup>7</sup> designates a lone pair of electrons and R<sup>8</sup> is selected from the group consisting of hydrogen, C<sub>1</sub>-C<sub>4</sub> alkyl and oxo; R<sup>20</sup> and R<sup>21</sup> are, independently, C<sub>1</sub>-C<sub>4</sub> alkyl or C<sub>3</sub>-C<sub>6</sub> cycloalkyl; provided that the compound of formula (I) does

5 not have any cumulated double bonds and further provided that the compound is not one of the following compounds:

Cholest-7-ene-3β-ol; 4-Methylcholest-7-ene-3β-ol; 4-Ethylcholest-7-ene-3β-ol; 4,4-Dimethylcholest-7-ene-3β-ol; 4α-Methyl-4β-ethylcholest-7-ene-3β-ol; 4α-Ethyl-4β-methylcholest-7-ene-3β-ol; 4,4-Diethylcholest-7-ene-3β-ol; 4-Propylcholest-7-ene-3β-ol; 4-Butylcholest-7-ene-3β-ol; 4-Isobutylcholest-7-ene-3β-ol; 4,4-Tetramethylenecholest-7-ene-3β-ol; 4,4-Pentamethylenecholest-7-ene-3β-ol; Cholest-8-ene-3β-ol;

10 4-Methylcholest-8-ene-3β-ol; 4-Ethylcholest-8-ene-3β-ol; 4,4-Dimethylcholest-8-ene-3β-ol; 4α-Methyl-4β-ethylcholest-8-ene-3β-ol; 4α-Ethyl-4β-methylcholest-8-ene-3β-ol; 4,4-Diethylcholest-8-ene-3β-ol; 4-Propylcholest-8-ene-3β-ol; 4-Butylcholest-8-ene-3β-ol; 4-Isobutylcholest-8-ene-3β-ol; 4,4-Tetramethylenecholest-8-ene-3β-ol; 4,4-Pentamethylenecholest-8-ene-3β-ol; Cholest-8(14)-ene-3β-ol;

15 4-Methylcholest-8(14)-ene-3β-ol; 4-Ethylcholest-8(14)-ene-3β-ol; 4,4-Dimethylcholest-8(14)-ene-3β-ol; 4α-Methyl-4β-ethylcholest-8(14)-ene-3β-ol; 4α-Ethyl-4β-methylcholest-8(14)-ene-3β-ol; 4,4-Diethylcholest-8(14)-ene-3β-ol; 4-Propylcholest-8(14)-ene-3β-ol; 4-Butylcholest-8(14)-ene-3β-ol; 4-Isobutylcholest-8(14)-ene-3β-ol; 4,4-Tetramethylenecholest-8(14)-ene-3β-ol; 4,4-Pentamethylenecholest-8(14)-ene-3β-ol; Cholesta-8,14-diene-3β-ol; 4-Methylcholesta-8,14-diene-3β-ol; 4-Ethylcholesta-8,14-diene-3β-ol; 4,4-Dimethylcholesta-8,14-diene-3β-ol; 4α-Methyl-4β-ethylcholesta-8,14-diene-3β-ol; 4α-Ethyl-4β-methylcholesta-8,14-diene-3β-ol; 4,4-Diethylcholesta-8,14-diene-3β-ol; 4-Propylcholesta-8,14-diene-3β-ol;

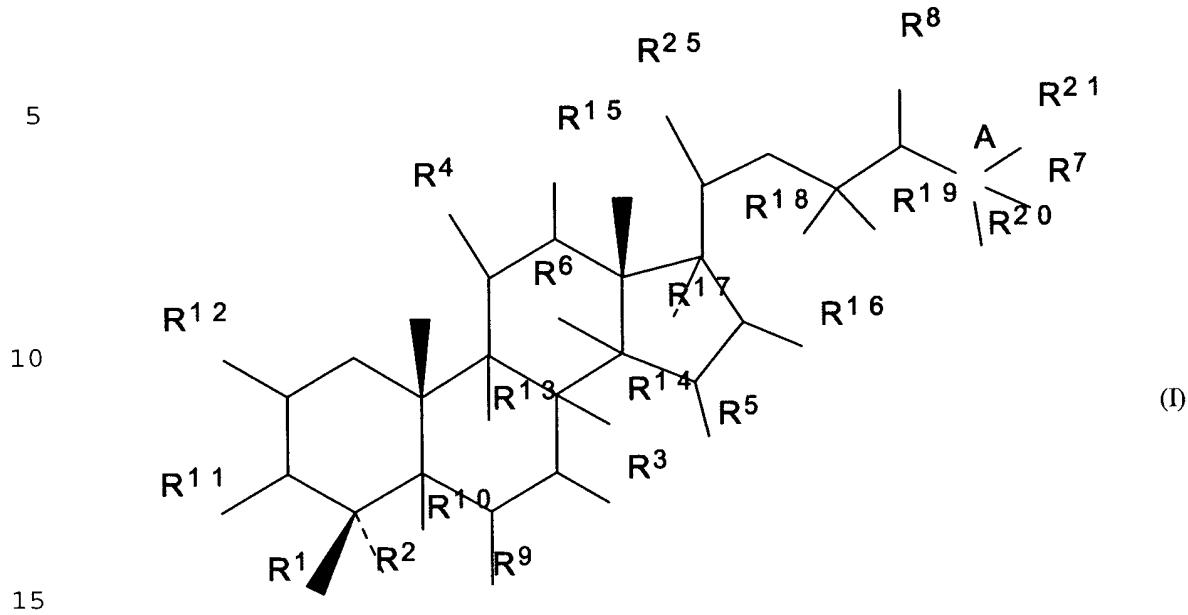
20 4-Butylcholesta-8,14-diene-3β-ol; 4-Isobutylcholesta-8,14-diene-3β-ol; 4,4-Tetramethylenecholesta-8,14-diene-3β-ol; 4,4-Pentamethylenecholesta-8,14-diene-3β-ol; Cholesta-8,24-diene-3β-ol; 4-Methylcholesta-8,24-diene-3β-ol; 4-Ethylcholesta-8,24-diene-3β-ol; 4,4-Dimethylcholesta-8,24-diene-3β-ol; 4α-Methyl-4β-ethylcholesta-8,24-diene-3β-ol; 4α-Ethyl-4β-methylcholesta-8,24-diene-3β-ol; 4,4-Diethylcholesta-8,24-diene-3β-ol; 4-Propylcholesta-8,24-diene-3β-ol; 4-Butylcholesta-8,24-diene-3β-ol; 4-Isobutylcholesta-8,24-diene-3β-ol;

25 4,4-Tetramethylenecholesta-8,24-diene-3β-ol; 4,4-Pentamethylenecholesta-8,24-diene-3β-ol; Cholesta-8,14,24-triene-3β-ol; 4-Methylcholesta-8,14,24-triene-3β-ol; 4-Ethylcholesta-8,14,24-triene-3β-ol; 4,4-

Dimethylcholesta-8,14,24-triene-3 $\beta$ -ol; 4 $\alpha$ -Methyl-4 $\beta$ -ethylcholesta-8,14,24-triene-3 $\beta$ -ol; 4 $\alpha$ -Ethyl-4 $\beta$ -methylcholesta-8,14,24-triene-3 $\beta$ -ol; 4,4-Diethylcholesta-8,14,24-triene-3 $\beta$ -ol; 4-Propylcholesta-8,14,24-triene-3 $\beta$ -ol; 4-Butylcholesta-8,14,24-triene-3 $\beta$ -ol; 4-Isobutylcholesta-8,14,24-triene-3 $\beta$ -ol; 4,4-Tetramethylenecholesta-8,14,24-triene-3 $\beta$ -ol; and 4,4-Pentamethylenecholesta-8,14,24-triene-3 $\beta$ -ol;

5 and esters and ethers thereof.

36. A method of promoting meiotic maturation in an oocyte, comprising culturing the oocyte in the presence of a compound of formula (I)



wherein R<sup>1</sup> and R<sup>2</sup>, independently, are selected from the group consisting of hydrogen and branched or unbranched C<sub>1</sub>-C<sub>6</sub> alkyl which may be substituted by halogen, hydroxy or cyano, or wherein R<sup>1</sup> and R<sup>2</sup> together designate methylene or, together with the carbon atom to which they are bound, form a cyclopropane ring, a cyclopentane ring, or a cyclohexane ring; R<sup>3</sup> is selected from the group consisting of hydrogen, methylene, hydroxy, methoxy, acetoxy, oxo, =NOR<sup>26</sup> wherein R<sup>26</sup> is hydrogen or C<sub>1</sub>-C<sub>3</sub> alkyl, halogen, and hydroxy and C<sub>1</sub>-C<sub>4</sub> alkyl bound to the same carbon atom of the sterol skeleton, or R<sup>3</sup> designates, together with R<sup>9</sup> or R<sup>14</sup>, an additional bond between the carbon atoms to which R<sup>3</sup> and R<sup>9</sup> or R<sup>14</sup> are bound; R<sup>4</sup> is selected from the group consisting of hydrogen, methylene, hydroxy, methoxy, acetoxy, oxo, =NOR<sup>27</sup> wherein R<sup>27</sup> is hydrogen or C<sub>1</sub>-C<sub>3</sub> alkyl, halogen, and hydroxy and C<sub>1</sub>-C<sub>4</sub> alkyl bound to the same carbon atom of the sterol skeleton, or R<sup>4</sup> designates, together with R<sup>13</sup> or R<sup>15</sup>, an additional bond between the carbon atoms to which R<sup>4</sup> and R<sup>13</sup> or R<sup>15</sup> are bound; R<sup>5</sup> is selected from the group consisting of hydrogen, C<sub>1</sub>-C<sub>4</sub> alkyl, methylene, hydroxy, methoxy, oxo, and =NOR<sup>22</sup> wherein R<sup>22</sup> is hydrogen or C<sub>1</sub>-C<sub>3</sub> alkyl, or R<sup>5</sup> designates, together with R<sup>6</sup>, an additional bond between the carbon atoms to which R<sup>5</sup> and R<sup>6</sup> are bound.

atoms to which R<sup>5</sup> and R<sup>6</sup> are bound; R<sup>6</sup> is hydrogen or R<sup>6</sup> designates, together with R<sup>5</sup>, an additional bond between the carbon atoms to which R<sup>5</sup> and R<sup>6</sup> are bound; R<sup>9</sup> is hydrogen or R<sup>9</sup> designates, together with R<sup>3</sup> or R<sup>10</sup>, an additional bond between the carbon atoms to which R<sup>9</sup> and R<sup>3</sup> or R<sup>10</sup> are bound; R<sup>10</sup> is hydrogen or R<sup>10</sup> designates, together with R<sup>9</sup>, an additional bond between the carbon atoms to which R

5 10 and R<sup>9</sup> are bound; R<sup>11</sup> is selected from the group consisting of hydroxy, alkoxy, substituted alkoxy, acyloxy, sulphonyloxy, phosphoryloxy, oxo, =NOR<sup>28</sup> wherein R<sup>28</sup> is hydrogen or C<sub>1</sub>-C<sub>3</sub> alkyl, halogen and hydroxy and C<sub>1</sub>-C<sub>4</sub> alkyl bound to the same carbon atom of the sterol skeleton, or R<sup>11</sup> designates, together with R<sup>12</sup>, an additional bond between the carbon atoms to which R<sup>11</sup> and R<sup>12</sup> are bound; R<sup>12</sup> is selected from the group consisting of hydrogen, C<sub>1</sub>-C<sub>3</sub> alkyl, vinyl, C<sub>1</sub>-C<sub>3</sub> alkoxy and halogen, or R<sup>12</sup>

10 designates, together with R<sup>11</sup>, an additional bond between the carbon atoms to which R<sup>12</sup> and R<sup>11</sup> are bound; R<sup>13</sup> is hydrogen or R<sup>13</sup> designates, together with R<sup>4</sup> or R<sup>14</sup>, an additional bond between the carbon atoms to which R<sup>13</sup> and R<sup>4</sup> or R<sup>14</sup> are bound; R<sup>14</sup> is hydrogen or R<sup>14</sup> designates, together with R<sup>3</sup>, R<sup>6</sup> or R<sup>13</sup>, an additional bond between the carbon atoms to which R<sup>14</sup> and R<sup>3</sup> or R<sup>6</sup> or R<sup>13</sup> are bound; R<sup>15</sup> is selected from the group consisting of hydrogen, C<sub>1</sub>-C<sub>4</sub> alkyl, methylene, hydroxy, methoxy, acetoxy, oxo, and =NOR<sup>23</sup> wherein R<sup>23</sup> is hydrogen or C<sub>1</sub>-C<sub>3</sub> alkyl, or R<sup>15</sup> designates, together with R<sup>4</sup>, an additional bond between the carbon atoms to which R<sup>15</sup> and R<sup>4</sup> are bound; R<sup>16</sup> is selected from the group consisting of hydrogen, C<sub>1</sub>-C<sub>3</sub> alkyl, methylene, hydroxy, methoxy, oxo and =NOR<sup>24</sup> wherein R

15 24 is hydrogen or C<sub>1</sub>-C<sub>3</sub> alkyl, or R<sup>16</sup> designates, together with R<sup>17</sup>, an additional bond between the carbon atoms to which R<sup>16</sup> and R<sup>17</sup> are bound; R<sup>17</sup> is hydrogen or hydroxy or R<sup>17</sup> designates, together with R<sup>16</sup>, an additional bond between the carbon atoms to which R<sup>17</sup> and R<sup>16</sup> are bound; R<sup>18</sup> and R<sup>19</sup> are, independently, hydrogen or fluoro; R<sup>25</sup> is selected from the group consisting of hydrogen, C<sub>1</sub>-C<sub>4</sub> alkyl, methylene, hydroxy and oxo; A is a carbon atom or a nitrogen atom; when A is a carbon atom, R<sup>7</sup> is selected from the group consisting of hydrogen, hydroxy and fluoro, and R<sup>8</sup> is selected from the group consisting of hydrogen, C<sub>1</sub>-C<sub>4</sub> alkyl, methylene and halogen, or R<sup>7</sup> designates, together with R<sup>8</sup>, an

20 additional bond between the carbon atoms to which R<sup>7</sup> and R<sup>8</sup> are bound; R<sup>20</sup> is selected from the group consisting of C<sub>1</sub>-C<sub>4</sub> alkyl, trifluoromethyl and C<sub>3</sub>-C<sub>6</sub> cycloalkyl and R<sup>21</sup> is selected from the group

25

consisting of C<sub>1</sub>-C<sub>4</sub> alkyl, C<sub>1</sub>-C<sub>4</sub> hydroxyalkyl, C<sub>1</sub>-C<sub>4</sub> haloalkyl containing up to three halogen atoms, methoxymethyl, acetoxyethyl, and C<sub>3</sub>-C<sub>6</sub> cycloalkyl, or R<sup>20</sup> and R<sup>21</sup>, together with the carbon atom to which they are bound, form a C<sub>3</sub>-C<sub>6</sub> cycloalkyl ring; and when A is a nitrogen atom, R<sup>7</sup> designates a lone pair of electrons and R<sup>8</sup> is selected from the group consisting of hydrogen, C<sub>1</sub>-C<sub>4</sub> alkyl and oxo; R<sup>20</sup> and R<sup>21</sup> are, independently, C<sub>1</sub>-C<sub>4</sub> alkyl or C<sub>3</sub>-C<sub>6</sub> cycloalkyl; provided that the compound of formula (I) does not have any cumulated double bonds and further provided that the compound is not one of the following compounds:

5 Cholest-7-ene-3β-ol; 4-Methylcholest-7-ene-3β-ol; 4-Ethylcholest-7-ene-3β-ol; 4,4-Dimethylcholest-7-ene-3β-ol; 4α-Methyl-4β-ethylcholest-7-ene-3β-ol; 4α-Ethyl-4β-methylcholest-7-ene-3β-ol; 4,4-

10 Diethylcholest-7-ene-3β-ol; 4-Propylcholest-7-ene-3β-ol; 4-Butylcholest-7-ene-3β-ol; 4-Isobutylcholest-7-ene-3β-ol; 4,4-Tetramethylenecholest-7-ene-3β-ol; 4,4-Pentamethylenecholest-7-ene-3β-ol; Cholest-8-ene-3β-ol;

15 4-Methylcholest-8-ene-3β-ol; 4-Ethylcholest-8-ene-3β-ol; 4,4-Dimethylcholest-8-ene-3β-ol; 4α-Methyl-4β-ethylcholest-8-ene-3β-ol; 4α-Ethyl-4β-methylcholest-8-ene-3β-ol; 4,4-Diethylcholest-8-ene-3β-ol;

20 4-Propylcholest-8-ene-3β-ol; 4-Butylcholest-8-ene-3β-ol; 4-Isobutylcholest-8-ene-3β-ol; 4,4-Tetramethylenecholest-8-ene-3β-ol; Cholest-8(14)-ene-3β-ol; 4-Methylcholest-8(14)-ene-3β-ol; 4-Ethylcholest-8(14)-ene-3β-ol; 4,4-Dimethylcholest-8(14)-ene-3β-ol; 4α-Methyl-4β-ethylcholest-8(14)-ene-3β-ol; 4α-Ethyl-4β-methylcholest-8(14)-ene-3β-ol; 4,4-Diethylcholest-8(14)-ene-3β-ol; 4-Propylcholest-8(14)-ene-3β-ol; 4-Butylcholest-8(14)-ene-3β-ol;

25 4-Isobutylcholest-8(14)-ene-3β-ol; 4,4-Tetramethylenecholest-8(14)-ene-3β-ol; 4,4-Pentamethylenecholest-8(14)-ene-3β-ol; Cholesta-8,14-diene-3β-ol; 4-Methylcholesta-8,14-diene-3β-ol; 4-Ethylcholesta-8,14-diene-3β-ol; 4,4-Dimethylcholesta-8,14-diene-3β-ol; 4α-Methyl-4β-ethylcholesta-8,14-diene-3β-ol; 4α-Ethyl-4β-methylcholesta-8,14-diene-3β-ol; 4,4-Diethylcholesta-8,14-diene-3β-ol; 4-Propylcholesta-8,14-diene-3β-ol;

30 4-Butylcholesta-8,14-diene-3β-ol; 4-Isobutylcholesta-8,14-diene-3β-ol; 4,4-Tetramethylenecholesta-8,14-diene-3β-ol; 4,4-Pentamethylenecholesta-8,14-diene-3β-ol; Cholesta-8,24-diene-3β-ol; 4-Methylcholesta-8,24-diene-3β-ol; 4-Ethylcholesta-8,24-diene-3β-ol; 4,4-Dimethylcholesta-8,24-diene-3β-ol; 4α-Methyl-4β-ethylcholesta-8,24-diene-3β-ol; 4α-Ethyl-4β-methylcholesta-8,24-diene-3β-ol; 4,4-Diethylcholesta-8,24-diene-3β-ol; 4-Propylcholesta-8,24-diene-3β-ol; 4-Butylcholesta-8,24-diene-3β-ol; 4-Isobutylcholesta-8,24-diene-3β-ol;

4,4-Tetramethylenecholesta-8,24-diene-3 $\beta$ -ol; 4,4-Pentamethylenecholesta-8,24-diene-3 $\beta$ -ol; Cholesta-8,14,24-triene-3 $\beta$ -ol; 4-Methylcholesta-8,14,24-triene-3 $\beta$ -ol; 4-Ethylcholesta-8,14,24-triene-3 $\beta$ -ol; 4,4-Dimethylcholesta-8,14,24-triene-3 $\beta$ -ol; 4 $\alpha$ -Methyl-4 $\beta$ -ethylcholesta-8,14,24-triene-3 $\beta$ -ol; 4 $\alpha$ -Ethyl-4 $\beta$ -methylcholesta-8,14,24-triene-3 $\beta$ -ol; 4,4-Diethylcholesta-8,14,24-triene-3 $\beta$ -ol; 4-Propylcholesta-8,14,24-triene-3 $\beta$ -ol; 4-Butylcholesta-8,14,24-triene-3 $\beta$ -ol; 4-Isobutylcholesta-8,14,24-triene-3 $\beta$ -ol; 4,4-Tetramethylenecholesta-8,14,24-triene-3 $\beta$ -ol; and 4,4-Pentamethylenecholesta-8,14,24-triene-3 $\beta$ -ol;  
5 and esters and ethers thereof.